PEN AND ELECTRONIC DEVICE INCLUDING THE SAME

PRIORITY

[0001] This application claims priority under 35 U.S.C. §119(a) to a Korean Patent Application which was filed in the Korean Intellectual Property Office on Sep. 17, 2015 and assigned Serial No. 10-2015-0131627, the contents of which are incorporated herein by reference.

BACKGROUND

[0002] 1. Field of the Disclosure

[0003] The present disclosure relates generally to a pen and electronic device, and more particularly, to a pen that is removably mounted on an electronic device and an electronic device including the same.

[0004] 2. Description of the Related Art

[0005] An input pen is frequently used in order to input necessary information to a touch screen of an electronic device. Such pen types include a pressure-sensitive input pen that applies a predetermined pressure to be recognized by the touch screen and a capacitive input pen.

[0006] Input pens to be used for a touch screen have generally been adopted as an internal type to be detachably mounted on an electronic device. Recently, in order to reduce the size, thickness, and weight of an electronic device, input pens have also been adopted as an external type to be held separately from the electronic device.

[0007] The input pens configured to be detachably mounted on an electronic device are conveniently portable and involve less risk of being misplaced. However, because the input pens may be used anytime and anywhere, there is an increased risk of the pens incurring water infiltration, thereby causing damage to the pens.

[0008] As such, there is a need in the art for an input pen that is impervious to such water infiltration.

SUMMARY

[0009] The present disclosure has been made to address the above-mentioned problems and disadvantages, and to provide at least the advantages described below.

[0010] Accordingly, an aspect of the present disclosure is to provide an electronic device that enables the waterproofing of an input pen mounted on the electronic device.

[0011] According to an aspect of the present disclosure, an electronic device may include a housing that includes a first face that is directed to a first direction, a second face that is directed opposite to the first direction, and a side face that at least partially encloses a space between the first face and the second face, an opening that is formed in the side face of the housing; a hole connected to the opening, a contact disposed inside the hole; a stylus pen configured to be at least partially inserted into the hole, and to be removable from the hole, a friction member arranged on at least a portion of an outer surface of the stylus pen, and formed to be in contact with an inner portion of the hole, a display module exposed to the first face of the housing, and configured to receive an input through the stylus pen, a processor electrically connected to the display module, and a memory electrically connected to the processor.

[0012] According to another aspect of the present disclosure, an electronic device may include a case, an input pen inserted into and removable from the case, and at least one sealing member mounted on an outer surface of the input pen such that at least a portion of the sealing member protrudes outward, and when the input pen is mounted in the case, at least a portion of the input pen may be in close contact with an inner surface of the case so as to seal an inner portion of the case.

[0013] According to another aspect of the present disclosure, an electronic device may include a rear case, an input pen insertion section formed in the rear case, one or more sealing members arranged on a first face of the insertion section along a direction of mounting and removing the input pen such that the sealing members partially protrude from the first face of the insertion section, wherein, when the input pen is inserted, the sealing member may fix the inserted input pen while sealing an inner portion of the insertion section by being in close contact with the input pen.

[0014] According to another aspect of the present disclosure, an electronic device may include a rear case a back cover coupled to the rear case, an input pen insertion section arranged along a side of the rear case, an input pen configured to be mounted in and removed from the input pen insertion section, at least one sealing member mounted on an outer surface of the input pen, and configured to primarily fix the input pen while sealing an inner portion of the case by being at least partially in close contact with an inner surface of the case, and a damper disposed in the input pen insertion section to secondarily fix the input pen inserted into the input pen insertion section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The above and other aspects, features, and advantages of the present disclosure will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0016] FIG. **1** illustrates the front face of an electronic device according to embodiments of the present disclosure;

[0017] FIG. **2** illustrates the rear face of the electronic device according to embodiments of the present disclosure;

[0018] FIG. **3** illustrates an electronic device including an input pen waterproof device according to embodiments of the present disclosure;

[0019] FIG. **4** illustrates an exterior of an input pen, which is mounted with a sealing member, according to embodiments of the present disclosure;

[0020] FIG. **5** illustrates when an input pen according to embodiments of the present disclosure is mounted in an insertion section;

[0021] FIG. **6** illustrates the mounted state of a sealing member when an input pen according to embodiments of the present disclosure is mounted in an insertion section;

[0022] FIG. **7** illustrates the mounted state of the sealing member according to embodiments of the present disclosure;

[0023] FIG. **8** illustrates when an input pen according to embodiments of the present disclosure is mounted in an insertion section and an end of the input pen is coupled to a damper;

[0024] FIG. **9** illustrates when a sealing member according to embodiments of the present disclosure is mounted on the inner surface of the insertion section;